CT ANALYSIS OF OVARIAN TUMORS: CORRELATIONS WITH LAPAROSCOPICAL AND SURGICAL FINDINGS

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Summary: This study concerns a selected group of 21 patients with ovarian carcinoma in whom CT, laparotomy, and laparoscopy findings could be compared. Considering the loco-regional and distant abdomenal sites of involvement, the limits and possibilities of CT in diagnosis and follow-up are outlined.

INTRODUCTION

The clinical history of ovarian tumors necessitates second-lock surgery ([5, 8]) and occasional laparoscopy for diagnosis as well as therapy. Computed Tomography (CT), in any case, may play a role in staging and in follow-up ([6, 7]).

The scope of this study is to explore correlations between CT and anatomo-pathological findings in order to define the most suitable diagnostic approach to the problem.

MATERIALS AND METHODS

28 patients with ovarian carcinoma had been evaluated with CT. Of these 21 patients had undergone CT, laparotomy (LT) and laparoscopy (LS) within a short time period, and findings therefore could be correlated; this selected group forms the basis of this study (table 1).

In all patients, CT scans covered the entire abdomen (from the sternal xyphoid appendix to the pubic symphysis) and were performed after proper patient preparation, as indicated in the literature ([1, 9]). Scans were evaluated considering routes of neoplastic spread in the abdomen, and distinguishing loco-regional (uterus, parametrium, bladder, ureters, rectum, peritoneum) from distant (lymph nodes, liver) sites of involvement ([7]).

RESULTS

CT provided reliable identification of masses originating from the ovary (100% of cases), and their densitometric characterization (table II); however, the tumors we observed were all rather large, and therefore easily recognizable.

A case of uterine infiltration was not appreciated and the uterus was considered as apparently univolved, while three cases in which the ovarian mass was not di-

Table 1. — *Correlations between CT, LT and LS findings.*

Sites of involvement	CT	LT and/or LS
Parametrium	4″	3
Uterus		
- poorly discernible mass/uterus	4″	1
- apparently univolved uterus	–°	1
Ureters	2	2
Bladder		
- indicative signs	1	1
- controversial signs	3″	1
Rectum	2	2
Ascites	10	10
Mesenterium	–°	2
Omentum	2°	11
Peritoneum	8°	15
Lymph nodes	–°	5
Liver	8	4°

″overestimate; °underestimate (explained in test).

Table 2. — *Densitometric characterization of the ovarian masses.*

Solid	52.3%
Mixed	28.7%
Liquid	19.0%

scernible from the uterus were overestimated. CT findings also overestimated a case of parametrium infiltration (four cases *vs* three recognized with LT and/or LS); this may be attributed to the aspecifity of the finding, especially after radiotherapy (thickening of the broad ligaments and dense tissue occupying the fat planes), which may also be due to fibrosis as well. In this regard, nonetheless, CT usually has high detection rates for all «large gynecologic masses», as demonstrated in our series of 93 cases in which detection was 88% ([7]).

In reference to the urinary tract involvement, when hydroureteronephrosis was present, it was consistently identified; as far as the bladder is concerned, no problems arose in the presence of signs indicating infiltration (mass projecting into the lumen), but two cases with controversial findings (cancellation of perivescical adipose planes with tortuous profile) were overestimated.

Rectal infiltration was recognized in the two cases where it occurred. Considering gynecological tumors as a whole, CT had rather low accuracy rates in the presence of bladder and rectal involvement (59 and 50% respectively), therefore, at the present time, traditional radiology and endoscopy are still more reliable, especially for the detection of small infiltrations.

Ascites fluid, which very frequently accompanies peritoneal invasion, was recognized in all 10 cases in which it occurred; «dense-liquid» type values led us to suspect the hemorrhagic nature of the effusion. Metastases to the mesenterium, omentum and peritoneum instead were often misinterpreted because of their small size; it is known that lesion of about 1 cm may be recognized on CT ([1, 6, 9]). In reference to the 1.5 cm limit for pathologic lymph nodes identifiable on CT ([2, 3]), five cases of lymph node metastases were not recognized.

CT was decidedly more reliable instead in detecting hepatic metastases, which were ascertained in eight cases, *vs* the four identified on LT and LS. The CT investigation in fact allows an in depth study of the hepatic parenchyma, unlike endoscopic and surgical procedures which only permit a study of the surface.

DISCUSSION

On the basis of this study, the possibilities and limits of CT in ovarian carcinoma may be evaluated. In fact, CT was highly accurate in the identification and densitometric characterization of ovarian mass as well as in the recognition of parametrial infiltration, hydroureteronephrosis, ascites and hepatic metastases. On the other hand, less reliability was recorded in the study of rectal and bladder involvement, and peritoneal and lymphatic metastases.

Despite these restriction, however, and considering the invasiveness of surgical exploration as well as the limits of laparoscopy (presence of adhesions which impede accurate examination of the peritoneal cavity, impossibility of studying retroperitoneal masses), CT nonetheless constitutes an important source of information. In fact, during the diagnostic phase, CT permits a better evaluation and a panoramic analysis of tumor spread; during follow-up, comparison of periodic CT scans can demonstrate tumor recurrence. In this way, and in agreement with literature reports ([1, 4]), CT investigation may anticipate the time of surgical revision, and thus personalize the clinical protocols in use.

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